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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,517	12/05/2003	Sang-Yong Kim	8836-203 (IE12204-US)	9036
22150	7590	10/06/2005	EXAMINER	
F. CHAU & ASSOCIATES, LLC 130 WOODBURY ROAD WOODBURY, NY 11797			THOMAS, TONLAE M	
			ART UNIT	PAPER NUMBER
			2822	

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/728,517

Applicant(s)

KIM ET AL.

Examiner

Toniae M. Thomas

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) 7-10 and 35-38 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-34 is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4 is/are rejected.
- 7) ☒ Claim(s) 3,5 and 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>01/10/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is a first Office action on the merits of Application Serial No. 10/728,517. Currently, claims 1-38 are pending.

Election/Restrictions

2. Applicant's election with traverse of Group IA in the reply filed on 10 August 2005 is acknowledged. The traversal is on the ground(s) that while the different claim Species may be distinct, examination will not present a serious burden. This is not found persuasive. While the inventions of Species A and Species B are classifiable together, the inventions have separate status in the art and may require different fields of search (MPEP §808.02 (B)).

The requirement is still deemed proper and is therefore made FINAL.

3. Claims 7-10 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Claims 35-38 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2822

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Keitetsu (JP 2000133635).¹

Keitetsu discloses a method of selectively removing metal layers in a process for fabricating a semiconductor device (see English translation provided with this action). The method comprises: removing the metal layers with a cleaning solution, the cleaning solution comprising an acid solution and an oxidation agent containing iodine (see par. 24, lines 4-15).

The metal layers comprise at least a titanium layer (see par. 24, lines 4-15).

6. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Kwag et al. (US 6,140,233).

The Swag et al. patent (Swag) discloses a method of selectively removing metal layers in a process for fabricating a semiconductor device (see figs. 10-15 and accompanying text). The method comprises: removing tungsten layer 232 with a cleaning solution (col. 9, lines 25-34, wherein the cleaning solution may comprise an acid solution and an oxidation agent containing iodine (col. 8, lines 35-40).

The acid solution may include at least one of sulfuric acid and phosphoric acid, and the oxidation agent containing iodine may include at least

¹ Applicant submitted reference as prior art.

Art Unit: 2822

one selected from the group consisting of KIO_3 , NH_4IO_3 , LiIO_3 , CaIO_3 , BaIO_3 , KI , and NH_4I (col. 8, lines 35-40).

Allowable Subject Matter

7. Claims 11-34 are allowable over the prior art of record. The prior art of record does not anticipate, teach, or suggest a method of selectively removing a metal layer in a process for forming a silicide layer substantially as recited in claim 11, wherein the method comprises: cleaning a non-reacting metal layer that does not participate in the silicidation reaction using a cleaning solution, wherein the cleaning solution includes an acid solution and an oxidation agent containing iodine. Moreover, the prior art of record does not anticipate, teach, or suggest a method of selectively removing a metal layer in a process for forming a silicide layer substantially as recited in claim 25, wherein the method comprises: performing a cleaning that removes the titanium nitride layer and a non-reacting metal layer using a cleaning solution, wherein the cleaning solution includes an acid solution, an oxidation agent containing iodine, and water.

8. Claims 3, 5, and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toniae M. Thomas whose telephone number is (571) 272-1846. The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 5:30 p.m.

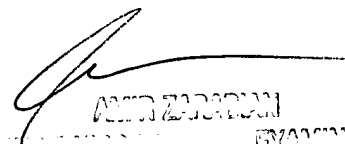
Art Unit: 2822

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TMT

02 October 2005


AMIR ZARABIAN
EXAMINER
(571) 272-1852